UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SRINIVAS GUTTA and KAUSHAL KURAPATI

Appeal 2007-1246
Application 10/014,180
Technology Center 2100

Decided: June 11, 2007

Before ANITA PELLMAN GROSS, ALLEN R. MACDONALD, and JEAN R. HOMERE, *Administrative Patent Judges*.

GROSS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Gutta and Kurapati (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's Final Rejection of claims 1 through 23, which are all of the claims pending in this application.

Appellants' invention relates to a method and system for evaluating the closeness of two items, where each item is characterized by at least one

symbolic feature. Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A method for use in a recommender for evaluating the closeness of two items, each of said items characterized by at least one symbolic feature, said method comprising the steps of:

computing a distance between corresponding symbolic feature values of said two items based on an overall similarity of classification of all instances for each possible value of said symbolic feature values; and

aggregating the distances between each of said symbolic feature values to determine the closeness of said two items.

The prior art reference of record relied upon by the Examiner in rejecting the appealed claims is:

Bieganski	US 6,334,127 B1	Dec. 25, 2001

Claims 1 through 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Bieganski.

We refer to the Examiner's Answer (mailed September 5, 2006) and to Appellants' Brief (filed February 14, 2005) and Reply Brief (filed November 6, 2006) for the respective arguments.

SUMMARY OF DECISION

As a consequence of our review, we will reverse the anticipation rejection of claims 1 through 23. We also enter a new ground of rejection of claims 1 through 23 as being nonstatutory under 35 U.S.C. § 101.

OPINION

Independent method claims 1 and 10 recite the steps of computing a distance between corresponding symbolic features and aggregating the distances. Independent system claims 19 and 22 recite a processor configured to execute the steps of computing a distance and aggregating the distances. Similarly, independent system claim 20 recites "means for" performing the above noted steps. Independent claims 21 and 23 recite program code means for accomplishing the above noted steps. Thus, each of Appellants' independent claims requires a step of computing a distance between corresponding symbolic features and a step of aggregating the distances.

The Examiner asserts (Answer 4) that Bieganski's serendipity control value equals the claimed distance. The Examiner explains (Answer 5) that the serendipity control value "is a means to measure or rank the similarities (i.e., distance) between the items in the user preference data." Further the Examiner asserts (Answer 4) that Bieganski discloses aggregating the distances at column 14, lines 32-56. The Examiner explains (Answer 9) that Bieganski teaches aggregating the distances because "the serendipity-weighted and filtered recommendation with the serendipity control value . . . is ***added*** *to the set of serendipity weighted and filtered recommendations*" (emphasis in original).

Appellants contend (Br. 9 and Reply Br. 2) that Bieganski's serendipity control value is not equal to the claimed distance between corresponding symbolic features. Further, Appellants contend (Br. 9-10 and Reply Br. 3-4) that Bieganski fails to disclose the claimed step of aggregating the distances. The issues, therefore, are whether the serendipity

control value equals the distance between symbolic features and whether Bieganski discloses aggregating the distances.

Bieganski discloses (col. 9, ll. 24-27 and 47-54) that a serendipity control value is computed by applying a serendipity control function to each item in a community popularity data set. The results are values between 0 and 1, with 1 meaning that the item meets the serendipity requirements, and 0 meaning that the item does not meet the serendipity requirements. Bieganski further teaches (col. 9, l. 64-col. 10, l. 35) that a common control function includes a high frequency cutoff and a low frequency cutoff. In other words, the control function would assign a zero to all items with a community popularity value above and below a specified range. All items within the range would be assigned a value of one. The serendipity control values do not indicate overall similarities between items, but rather indicate weighted community popularities, wherein the weights are not necessarily applied linearly. In the example of the common control function, the weights are applied the same to high and low popularities, not increasing or decreasing with popularity. Therefore, Bieganski's computing serendipity control values does not equate to computing degrees of similarities, or distances, between corresponding symbolic features. Further, we find no disclosure in Bieganski of computing such distances.

Since we have found no disclosure of calculating distances, we likewise find no disclosure of aggregating distances. Nonetheless, even if we were to accept the Examiner's position that Bieganski's control values equal the claimed distances, Bieganski still fails to disclose aggregating the distances. Bieganski discloses in the portion of column 14 cited by the Examiner that the serendipity control values are multiplied by the

recommendation values and the resulting products are added to a list of recommendations. Thus, the control values are not aggregated or added or combined to form a collection; rather, the products of the control values and the recommendation values form a list or collection. Therefore, Bieganski fails to disclose each and every limitation of claims 1 through 23, and we cannot sustain the anticipation rejection of the claims.

Under the provisions of 37 C.F.R. § 41.50(b), we enter the following new ground of rejection against Appellants' claims 1 through 23 under 35 U.S.C. § 101 as being nonstatutory.

The Supreme Court has held that claims that, as a whole, are directed to nothing more than abstract ideas, natural phenomena, or laws of nature are not statutory under 35 U.S.C. § 101. *See Diamond v. Diehr*, 450 U.S. 175, 185, 209 USPQ 1, 7 (1981). An application of a law of nature or mathematical formula to a known structure or process, though, may be patentable. *Id.* at 187, 209 USPQ at 8. However, a process that comprises "no substantial practical application" of an abstract idea is not patentable, as such a patent would in effect be a patent on the abstract idea itself. *Gottschalk v. Benson*, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972).

Clearly, the present claims recite neither a natural phenomenon nor a law of nature, so the issue is whether they are directed to an abstract idea. We note that mathematical algorithms are considered to be abstract ideas. Thus, processes that are merely mathematical algorithms are nonstatutory under 35 U.S.C. § 101. We further note that it is generally difficult to ascertain whether a process is merely an abstract idea, particularly since claims are often drafted to include minor physical limitations such as data gathering steps or post-solution activity. However, if the claims are

considered to be an abstract idea, then the claims are not eligible for and, therefore, are excluded from patent protection.

Claims 1 through 9 recite a method "for use in a recommender." The recommender is solely recited as part of an intended use clause, and the claims do not specify whether or not the recommender is a computer. Thus, the methods appear to be disembodied concepts. Further, the claimed steps are (1) computing a distance, and (2) aggregating the distances to determine the closeness of two items. Both steps are mathematical functions, and the result is a mathematical value. Accordingly, claims 1 through 9 merely recite mathematical algorithms. Claims 10 through 18 likewise recite computing a distance and aggregating the distances, but add a third step of assigning the item to a group associated with a minimum distance value. As this third step is merely another mathematical function, claims 10 through 18 are also mathematical algorithms.

A programmed general purpose machine which merely performs a mathematical algorithm has been held nonstatutory as an attempt to patent the algorithm itself, see *Id.* and *In re de Castelet,* 562 F.2d 1236, 1243, 195 USPQ 439, 445 (CCPA 1977). We believe that a similar case exists for "manufactures" which store programs that cause a machine to perform a mathematical algorithm stored on a tangible medium.

Claims 19, 20, and 22 are directed to general purpose machines which merely perform the mathematical algorithms recited in claims 1 and 10. Also, claims 21 and 23 are directed to articles which store programs that cause the machines to perform the mathematical algorithms of claims 1 and 10. Thus, claims 19 through 23 are nonstatutory as being further attempts to patent the algorithms themselves.

Nonetheless, assuming *arguendo* that the claims are not solely directed to algorithms, the next question is whether the claimed invention is directed to a practical application of an abstract idea. "[W]hen a claim containing [an abstract idea] implements or applies that [idea] in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." *Diehr*, 450 U.S. at 192, 209 USPQ at 10. Also, according to the test set forth in *State Street Bank & Trust Co. v. Signature Finance Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed. Cir. 1998), the production of a useful, concrete, and tangible result equates to a practical application of an abstract idea.

In claims 1 and 10, we find no physical subject matter being transformed, just numerical values being manipulated. Further, though the methods are for evaluating the closeness of two items, in claims 1 through 4, 6, 10 through 13, and 15, the type of items being compared is not specified and could, in fact, be nothing more than geometric figures. Although claims 5, 7 through 9, 14, and 16 through 18 recite that the items are programs, content, or products, the data being manipulated by the process steps do not represent physical subject matter. Thus, we find no physical subject matter being transformed. Similarly, claims 19 through 23 provide no transformation of physical subject matter as they are directed to general purpose machines which are configured to perform the methods of claims 1 and 10 and articles which store program code for performing the methods of claims 1 and 10.

We also find that the methods of claims 1 and 10 fail to produce a useful, concrete, and tangible result as neither result is concrete and tangible. Specifically, the result of claim 1 is an aggregation of "distances" to determine the "closeness" of two items. However, the distances referenced in the claims are abstractions, not physical distances, as they relate to similarities between items. Likewise, the result of claim 10 is the assignment of an item to a group, another abstraction. Thus, neither method produces a concrete and tangible result. Since, the general purpose machines and the articles of claims 19 through 23 produce the same results as claims 1 and 10, they also fail to provide concrete and tangible results. Accordingly, as claims 1 through 23 fail to transform physical subject matter and fail to produce useful, concrete, and tangible results, they are abstract ideas that are nonstatutory under 35 U.S.C. § 101.

ORDER

The decision of the Examiner rejecting claims 1 through 23 under 35 U.S.C. § 102(e) is reversed. Also, we have entered a new ground of rejection of claims 1 through 23 under 35 U.S.C. § 101.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner. . . .
>
> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

REVERSED
37 C.F.R. § 41.50(b)

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